

REMARKS

Applicants respectfully request reconsideration and allowance.

Applicants acknowledge with appreciation the Examiner's careful consideration in review of their application.

The amended claims clearly define the invention consistent with the original description in the claims as originally presented. Since the amended claims make explicit what was implicit in the subject matter originally presented, it is not seen that any clarifying amendments, to the extent any claims have been amended, restricted in any way shape or form the scope of the inventions being claimed. Changing "the" to "a" has no effect on claim scope.

As to terms such as unexpanded layer and an expansion ratio, the Examiner may wish to review the specification at page 10, lines 5-6.

Objections to expressions such as long chain branch seem unnecessary in the present circumstances. Applicants respectfully direct attention to their specification at page 10, last four lines to pages 11-12.

New claims find basis in the specification at page 10.

Applicants next respectfully request reconsideration and withdrawal of the obviousness rejection of claims 1-9 over the Tsubone reference, U.S. Patent No. 5,882,782. After careful consideration of the thesis advance in the Office Action at page 3, Applicants submit shows that the reference neither describes nor would it have suggested a cell-wall density ratio, nor would it have provided a person of only ordinary skill in the art with sufficient information to make the calculation hypothesized in the Office Action. Since the reference does not teach the variable in question, nor does it supply the information necessary to ascertain whether a variable is present, it is an ipse dixit to thereafter opine that everything would have been obvious.

Applicants respectfully suggest Tsubone only teaches the cell size in the short diameter direction measured in a surface plane of a foamed sheet. Tsubone is silent about the relation between the number of cell walls in the thickness direction of an expanded layer and that in a direction perpendicular to the thickness direction. Tsubone is silent also about the significance of this relation. Therefore, those skilled in the art at the time the invention was made can not determine a proper cell wall density ratio.

In Tsubone, column 3, lines 55-63, there is a description "The cell size d is obtained by counting the number of cells in a 10 mm long straight line in the shorter diameter direction

on the surface of the foamed resin sheet (after strippable thermoplastic resin sheet, if laminated thereon, is stripped off), and dividing 10 mm by the number of the cells ($d=10/\text{number of cells}$)/ Where the 10 mm length on the surface contains non-foamed parts should be subtracted from the numerator (10 mm).” In column 6, lines 30-33, “In order to control cell size d within a range of from 0.005 to 0.5 m and to control surface smoothness R_{max} within a range of from 5 to 200 μm in co-extrusion, it is preferable to control ...” There and other passages in the reference do not describe, nor would they have suggested the present claimed invention.

Accordingly, Applicants earnestly but respectfully solicit a Notice of Allowance. Applicants believe they have addressed all matters responsibly, but if the Examiner has any questions please don't hesitate Applicants' undersigned counsel.

Respectfully submitted,

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APPENDIX

Amendments to existing claims:

1. (Amended) A thermoplastic resin sheet having a thermoplastic resin expanded layer of which expansion ratio is in the a range of 3 to 40 times, and cell wall density ratio is in the a range of 2 to 20.

2. (Amended) A thermoplastic resin sheet having a thermoplastic resin expanded layer of which expansion ratio is in the a range of 3 to 40 times, and cell wall density ratio is in the a range of 6 to 20.

3. (Amended) A thermoplastic resin sheet having a thermoplastic resin expanded layer of which expansion ratio is in the range of 3 to 40 times, cell wall density ~~in the direction of~~ across a thickness direction of said thermoplastic sheet is 8 cells/mm or more, and cell wall density ratio is in the a range of 6 to 20.

4. (Amended) A thermoplastic resin sheet having a thermoplastic resin expanded layer of which expansion ratio is in the range of 3 to 40 times, cell wall density ~~in the~~ across a thickness direction of ~~thickness of~~ said thermoplastic sheet is 8 cells/mm or more, and cell wall density ratio is not less than 2 but less than 6.

7. (Amended) The thermoplastic resin sheet according to claim 1, ~~which~~ wherein ~~said thermoplastic sheet~~ has a polyolefin-based resin unexpanded layer, ~~which~~ that is laminated on said expanded layer and has an expansion ratio in the a range of 1.0 to 1.5 times.

New claims 10-12 are added.

10. (New) The thermoplastic resin sheet according to claim 7, wherein said unexpanded layer has an expansion ratio in the range of 1.0 to 1.1.

11. (New) The thermoplastic resin sheet according to claim 7, wherein said unexpanded layer is formed of a polyolefin resin having a branching degree index [A] that is a numerical value defined by:

$$[A] = [\eta]_{Br}/[\eta]_{Lin}$$

wherein $[\eta]_{Br}$ represents the intrinsic viscosity of a polyolefin resin having a long chain branch and $[\eta]_{Lin}$ represents the intrinsic viscosity of a straight chain polyolefin having the repeating monomer units and weight average molecular weight as the polyolefin resin having the long chain branch.

12. (New) The thermoplastic resin sheet according to claim 11, wherein said unexpanded layer is formed of a polyolefin resin having a branching degree index [A], wherein $0.20 \leq [A] \leq 0.98$ is satisfied.